

Total site integration of light hydrocarbons separation process

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Ukraine is the largest consumer of hydrocarbons per unit of production in Europe (Ukraine policy review, 2006). The most important point is a reduction of energy consumption in chemical and metallurgical industries as a biggest consumer. This paper deals with energy savings potential of light hydrocarbons separation process. Energy consumption of light hydrocarbons separation process processes typical of Eastern European countries were analysed. Process Integration (PI) was used to perform a preliminary analysis of different units and fulfil the retrofit project of Total Site Integration (TSI). A new heat exchangers network (HEN) were developed and the equipment was calculated with use of the Pinch principles. A complex method was developed and applied to integrate several units at the enterprise site demonstrating the possibility to use heat pumps. Heat pump integration increases heat recovery and offers a solution in order to increase energy savings and project profitability. The estimated payback period for integration Heat Pump of Gas Separation Enterprise is about 127 days and the pathways of plant modernization have been also proposed.